MYCOTAXON

Volume 107, pp. 215–220 *January–March 2009*

Three new species of *Exobasidium* (*Exobasidiales*) from China

Zhenying Li[1,2] & Lin Guo[1*]

lizheny@mails.gucas.ac.cn **guol@sun.im.ac.cn*

[1]*Key Laboratory of Systematic Mycology and Lichenology*
Institute of Microbiology, Chinese Academy of Sciences
Beijing 100101, China

[2]*Graduate University of Chinese Academy of Sciences*
Beijing 100049, China

Abstract—Three new species, *Exobasidium kunmingense* on *Lyonia ovalifolia*, *Exobasidium lushanense* on *Rhododendron simsii* and *Exobasidium rhododendri-russati* on *R. russatum*, are reported from Yunnan and Jiangxi Provinces. *Exobasidium kunmingense* and *E. lushanense* cause leaf spots on leaves and *E. rhododendri-russati* causes small galls on leaves and stems.

Key words—*Ustilaginomycetes*, symptoms, taxonomy

According to Nannfeldt (1981), the number and size of sterigmata, the size of basidiospores and the germination form are used for the identification species of *Exobasidium*.

The first new species was collected from Yunnan Province in 2007. It is parasitic on *Lyonia ovalifolia*, causing leaf spots, concave on the lower surface. The leaf spot is red and about 4.5–15 mm in diam. There are one or more diseased parts on each leaf. The host plant belongs to the subfamily *Andromedoideae* of *Ericaceae*. Transverse sections of the diseased leaf show neither hypertrophy nor hyperplasia of plant cells. Hyphae protrude between epidermal cells, forming a continuous thick layer on the lower surfaces of the leaves at maturity. It is described as:

Exobasidium kunmingense Zhen Ying Li & L. Guo, **sp. nov.** **Figs. 1, 4-5**
MycoBank MB 512325

Hymenium hypophyllum. Basidia cylindrica, 4–6 µm lata, hyalina, terminaliter 3–6 sterigmatibus 3–4 × 1–1.2(–1.8) µm praedita. Basidiosporae cylindricae, 12–17 × 3–4 µm, hyalinae, laeves, curvae, primo continuae, dein 1(–3)-septatae, per hyphas germinantes.

*corresponding author

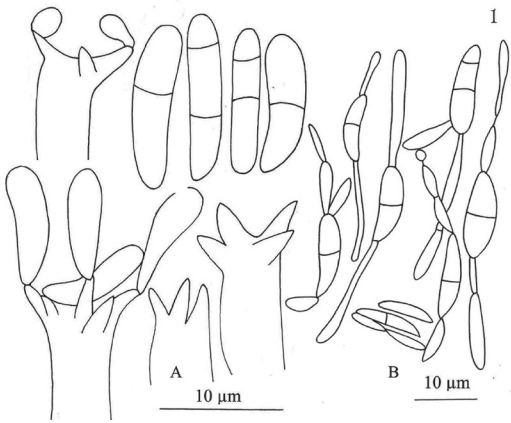

Fig. 1. Line drawings of *Exobasidium kunmingense* on *Lyonia ovalifolia* (HMAS 173147, holotype). A. Basidia, sterigmata and basidiospores. B. Basidiospore germination.

Hymenium hypophyllous. Basidia cylindrical, 4–6 μm wide, hyaline, with 3–6 sterigmata. Sterigmata conical, 3–4 × 1–1.2(–1.8) μm. Basidiospores cylindrical, 12–17 × 3–4 μm, hyaline, smooth, at first continuous, then 1(–3)-septate, slightly curved, germinating by short germ tubes.

Specimen examined—On *Lyonia ovalifolia* (Wall.) Drude (*Ericaceae*), Yunnan: Luquan, Zhelaocun, alt. 2520 m, 1 VII 2006, Z.Y. Li & L. Guo 335, HMAS 173147 (**holotype**).

Colonies on PDA grew gradually to a maximum 9 mm diameter in 21-day incubation at 25°C. The colony was leathery, pale yellow and corrugate on the surface, mainly composed of conidia. Conidia bacilliform and 5–9 × 1–1.2(–1.8) μm.

Exobasidium kunmingense is similar to *E. lyoniae* Zhen Ying Li & L. Guo (Li & Guo 2006a) from which it mainly differs in the number of sterigmata (3–6 vs. 2–5).

The second new species was collected from Jiangxi Province in 2007. It is parasitic on *Rhododendron simsii*, causing leaf spots. There are one or more diseased parts on each leaf. The host plant belongs to the subfamily *Rhododendroideae* of *Ericaceae*. Transverse sections of the diseased leaf show hypertrophy of plant cells. Hyphae protrude between epidermal cells, forming a continuous thick layer on the lower surface of the leaves at maturity. It is described as:

Exobasidium lushanense Zhen Ying Li & L. Guo, **sp. nov.** **Figs. 2, 6-7**

MycoBank MB 512326

Hymenium hypophyllum. Basidia cylindrica, 36–60 × 5.5–7 μm, hyalina, terminaliter (2–)3–6 sterigmatibus 3–4 × 1–1.5 μm praedita. Basidiosporae cylindricae vel clavatae,

(7.2–)9–13(–15) × 3–4 µm, hyalinae, laeves, primo continuae, dein 1–3-septatae, curvae, per hyphas germinantes.

Hymenium hypophyllous. Basidia cylindrical, 36–60 × 5.5–7 µm, hyaline, with (2–)3–6 sterigmata. Sterigmata conical, 3–4 × 1–1.5 µm. Basidiospores cylindrical or clavate, (7.2–)9–13(–15) × 3–4 µm, hyaline, smooth, at first continuous, then 1–3-septate, and slightly curved, germinating by germ tubes.

Specimen examined—On *Rhododendron simsii* Planch. (*Ericaceae*), Jiangxi: Lushan Botanical Garden, alt. 1100 m, 14 V 2007, Z.Y. Li & L. Guo 631, HMAS 173148 (**holotype**).

Colonies on PDA grew gradually to a maximum 10 mm diameter in 21-day incubation at 25°C. The colony was leathery, pale yellow and smooth on the surface, mainly composed of hyphae.

Exobasidium lushanense is similar to *E. japonicum* Shirai (Shirai 1896, Ezuka 1990) from which it mainly differs in causing leaf spots, while *E. japonicum* causes leaf hypertrophy and deformation.

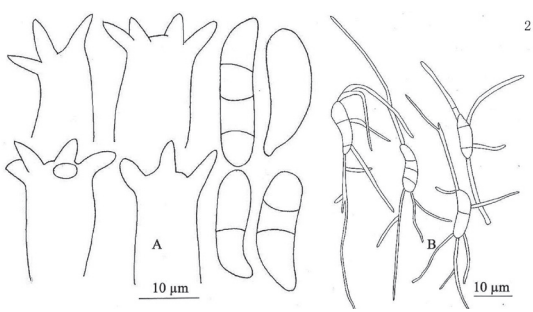

Fig. 2. Line drawings of *Exobasidium lushanense* on *Rhododendron simsii* (HMAS 173148, holotype). A. Basidia, sterigmata and basidiospores. B. Basidiospore germination.

The third new species parasitizes on young leaves of *Rhododendron russatum*, causing small galls on leaves and stems. Transverse sections of the diseased leaf show hypertrophy and hyperplasia of plant cells. Hyphae protrude between epidermal cells, forming a continuous thick layer on the surfaces of the galls at maturity. There are 2–3(–4) sterigmata per basidium.

Exobasidium rhododendri-russati Zhen Ying Li & L. Guo, **sp. nov.** **Figs. 3, 8-9**
MycoBank MB 512327

Hymenium album. Basidia cylindrica or clavata, 13–30 × 4–6 µm, hyalina, terminaliter 2–3(–4) sterigmatibus (2–)4.5–5.5 × 1–2 µm praedita. Basidiosporae cylindricae vel ellipsoideae, 11–16 × 2–3 µm, hyalinae, laeves, primo continuae, dein 1–3(–5)-septatae, curvatae, per hyphas germinantes.

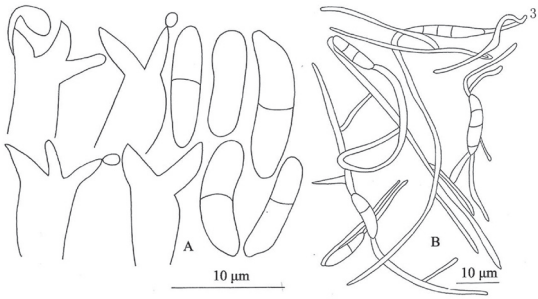

Fig. 3. Line drawings of *Exobasidium rhododendri-russati* on *Rhododendron russatum* (HMAS 183433, holotype). A. Basidia, sterigmata and basidiospores. B. Basidiospore germination.

Hymenium white. Basidia cylindrical or clavate, 13–30 x 4–6 μm, hyaline, with 2–3(–4) sterigmata. Sterigmata conical, (2–)4.5–5.5 × 1–2 μm. Basidiospores cylindrical or ellipsoidal, 11–16 × 2–3 μm, hyaline, smooth, at first continuous, then 1–3(–5)-septate, slightly curved, germinating by germ tubes.

Specimen examined—On *Rhododendron russatum* Balf. f. & Forrest (*Ericaceae*), Yunnan: Xianggelila, Yisicun, alt.3300 m, 26 IX 2007, Z.Y. Li, L. Guo & S. H. He 724, HMAS 183433 (**holotype**).

Colonies on PDA grew gradually to a maximum 10 mm diameter in 21-day incubation at 25°C. The colony was leathery, yellow and corrugate on the surface, mainly composed of conidia. Conidia linear, 6–17 x 0.5 μm.

Exobasidium rhododendri-russati is similar to *E. rhododendri-nivalis* Zhen Ying Li & L. Guo (Li & Guo 2008c) on *Rhododendron nivale* Hook. f. from which it mainly differs in having larger basidiospores (11–16 × 2–3 vs. 10.2–13 × 2.5–3 μm).

To date, 32 species of *Exobasidium* have been recorded in China (Sawada 1922, Teng 1963, Tai 1979, Guo et al. 1991, Zang 1996, Li & Guo 2006a, b, 2008a, b,c) including the three new species in this paper.

Acknowledgements

The authors would like to express their deep thanks to Dr. Eric H.C. McKenzie and Robert Bauer for serving as pre-submission reviewers, to Dr. Pennycook for nomenclatural

---

Figs. 4–5. *Exobasidium kunmingense* on *Lyonia ovalifolia* (HMAS 173147, holotype). Fig. 4. Symptoms. Fig. 5. Basidium, sterigmata and basidiospores as seen by SEM. **Figs. 6–7.** *Exobasidium lushanense* on *Rhododendron simsii* (HMAS 173148, holotype). Fig.6. Symptoms. Fig. 7. Basidium, sterigmata and basidiospores as seen by SEM. **Figs. 8–9.** *Exobasidium rhododendri-russati* on *Rhododendron russatum* (HMAS 183433, holotype). Fig. 8. Symptom. Fig. 9. Basidium, sterigmata and basidiospores as seen by SEM.

4
5
Mag HV Det Spot 10.0µm
6
7
07 WD Mag HV Det Spot 5.0µm
8
9
V Det WD Mag Pressure HFW 5.0µm

review, to Mr. Cao Ziyu (Institute of Botany, Chinese Academy of Sciences) for identifying the host plants, to Liang Jingnan for assistance with SEM photographs, and to Mrs. Zhu Xiangfei for inking in line drawings. This study was supported by the National Natural Science Foundation of China (No. 30499340 and No. 30670005).

Literature cited

Ezuka A. 1990. Notes on some species of *Exobasidium* in Japan (II). Trans. Mycol. Soc. Japan 31: 439–455.

Guo L, Zhou YL, Li YB. 1991. Study of the genus *Elaeodema* and *Exobasidium sawadae*. Acta Mycol. Sin. 10: 31–35.

Li ZY, Guo L. 2006a. A new species of *Exobasidium* (*Exobasidiales*) on *Rhododendron* from China. Mycotaxon 96: 323–326.

Li ZY, Guo L. 2006b. A new species and a new Chinese record of *Exobasidium* (*Exobasidiales*) from China. Mycotaxon 97: 379–384.

Li ZY, Guo L. 2008a. Two new species of *Exobasidium* (*Exobasidiales*) from China. Mycotaxon 104: 331–336.

Li ZY, Guo L. 2008b. Three new species and a new Chinese record of *Exobasidium* (*Exobasidiales*) in China. Fung. Divers. (in the press).

Li ZY, Guo L. 2008c. Two new species and a new Chinese record of *Exobasidium* (*Exobasidiales*) from China. Mycotaxon 105: 331–336..

Nannfeldt JA. 1981. *Exobasidium*, a taxonomic reassessment applied to the European species. Symb. Bot. Ups. 23 (2): 1–72.

Sawada K. 1922. Descriptive catalogue of the Formosan fungi. Part II. Dept. Agr. Gov't. Res. Inst. Formosa. Report 2. *Exobasidiales*. 106–110.

Shirai M. 1896. Descriptions of some new Japanese species of *Exobasidium*. Bot. Mag. Tokyo. 10: 51–54.

Tai FL. 1979. Sylloge Fungorum Sinicorum. Science Press, Beijing. 1–1527.

Teng SC. 1963. Fungi of China. Science Press, Beijing. 1–808.

Zang M. 1996. Fungi of the Hengduan Mountains. Science Press, Beijing. 1–598.